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### Comparative analysis of human and Dutch-type Alzheimer beta-amyloid peptides by infrared spectroscopy and circular dichroism.

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The 42 amino acid beta A4 peptide is the major constituent of the senile plaques, one of the hallmark neuropathological lesions of Alzheimer's disease. While C-terminally truncated variants were shown to be present in normal body fluids, a single Glu-->Gln change in the 39 amino acid form of beta A4 results in accelerated fibril formation in the brains of patients with Dutch-type hereditary cerebral hemorrhage with amyloidosis. In this study we used Fourier-transform infrared and circular dichroism spectroscopies on synthetic peptides to demonstrate that this mutation results in altered secondary structure in membrane mimicking solvents, characterized by a considerably higher beta-structure content for the mutant peptide. Moreover, extreme high and low pH were less effective in eliminating the beta-conformation for the Dutch-variant than for the normal human sequence.

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